Comparisons illustrated in Figures 3 through 5 consider the 15 surface samples that contain the highest concentrations of heavy metal pollutants in the Pamlico River estuarine system. These individual samples are compared with the average of three composite samples obtained by NSTP (1987) utilizing total sediment digestion techniques. The NSTP samples include Salem and Boston Harbors, Mass.; Raritan Bay, New Jersey; and Jones Bay, N.C. Samples from the first three areas generally contained the highest concentrations of the respective metals for the entire U.S. coastal regions studied. Jones Bay, located on the western side of Pamlico Sound near the mouth of the Pamlico River, represents an area that has minimal influence from anthropogenic sources and contained among the lowest concentrations of heavy metals within the NSTP sites.

Several points should be kept in mind when comparing the Pamlico River results to the NSTP data. The NSTP sites were deliberately located away from known anthropogenic point sources and dump sites in order to represent accumulations from multiple sources. Consequently, site-specific samples from each region should produce a wide range of numbers that could be significantly higher and lower than the values presented in Figures 3 through 5. Also, NSTP analyses were based upon total digestions, whereas analyses for the present study are based upon partial extraction techniques. Table 3 compares data obtained by Moore (in prep.) on three NSTP samples, obtained from NOAA, for Jones Bay and 30 samples for the Pamlico River utilizing both partial extraction and total digestion procedures on all samples. This comparison suggests that analytical numbers within this report are very conservative and on the low side of total elemental analyses such as the NSTP data, by the amount indicated in the column titled 'percent recovered by partial extraction' (Table 3).

Figures 3 through 5 indicate that the most enriched samples from the Pamlico have comparable concentrations to the averages from some of the most polluted regions of coastal U.S. Noteworthy among the Pamlico samples are the following:

1. High concentrations of most metals occur in all samples from Kennedy Creek (NAT1 through NAT12);
2. Cadmium concentrations in samples from the middle Pamlico River (PAM25, PAM26, PAM30, PAM31, TG1, and SV1) and South Creek (STH5), adjacent to an active phosphate mining operation, are very high.
3. Samples near municipal treatment outfalls at Washington (NAT samples in Kennedy Creek) and Belhaven (PUN11) are particularly enriched in cadmium, silver, and copper;
4. One sample near a marina railway in Broad Creek (BRD1) is extremely enriched in copper; and
5. One sample in the lower Tar River off Washington (TAR22) is extremely enriched in lead.

Chromium values in the Pamlico samples appear anomalously low (Fig. 4); however, the light leach extraction procedure utilized recovered between 20% to 25% of total chromium present (Table 3). Consequently, actual chromium values may be from four to five times higher than those shown in Figure 4 and thus, are actually quite comparable to levels within the polluted harbors.